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IS 7406-1 (1984): Jute Bags for Packing Fertilizers, Part 1: Laminated Bags Manufactured From 407 g/m² 85 X 39 Tarpaulin Fabric [TXD 3: Jute and Jute Products]



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IS : 7406 (Part 1) - 1984

Indian Standard

**SPECIFICATION FOR
JUTE BAGS FOR PACKING FERTILIZERS**

**PART 1 LAMINATED BAGS MANUFACTURED
FROM 407 g/m²; 85 × 39 TARPAULIN FABRIC**

(First Revision)

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**BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002**

Indian Standard

SPECIFICATION FOR

JUTE BAGS FOR PACKING FERTILIZERS

PART 1 LAMINATED BAGS MANUFACTURED

FROM 407 g/m²; 85 × 39 TARPAULIN FABRIC

(First Revision)

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Indian Standard
SPECIFICATION FOR
JUTE BAGS FOR PACKING FERTILIZERS

**PART 1 LAMINATED BAGS MANUFACTURED
FROM 407 g/m²; 85 × 39 TARPAULIN FABRIC**

(First Revision)

0. FOREWORD

0.1 This Indian Standard (Part 1) (First Revision) was adopted by the Indian Standards Institution on 15 December 1984, after the draft finalized by the Jute and Jute Products Sectional Committee had been approved by the Textile Division Council.

0.2 Double warp (DW) jute tarpaulin bags are used as conventional packs for fertilizers. A bag containing fertilizer undergoes adverse climatic conditions and transport hazards from factory to farmer's field. A fertilizer bag should yield rather than fracture under very rapid stresses and should withstand the movement of impact. Further, due to the varying hygroscopic nature and bulk density of fertilizers, selection of proper type of bag has a direct bearing on the economy of the packing of fertilizers.

0.3 The dimensions of the bag specified in this standard are optimum for holding capacity of 50 kg of fertilizers. The dimensions are corrected for optimum free space of about 20 cm when measured along the surface of the fabric from mouth stitch line of the bag up to the surface level of the content. The bag conforming to the specification, if packed with approximately 50 kg of fertilizers, is expected to withstand normal transit hazards due to incidental droppings.

0.4 This standard was first issued in 1974 as IS : 7406-1974 Specification for laminated jute bags for packing fertilizers, and was subsequently redesignated as IS : 7406 (Part 1)-1974 through an amendment. In this first revision, requirements regarding bitumen free margin at the mouth of the bags have been modified. Also provision for the use of high molecular, high density, polyethylene (HM — HDPE) film of 50 gauge has been made as an alternate to HDPE film for lamination purposes.

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0.5 Laminated jute bags manufactured from 380 g/m²; 68 × 39 (14 oz/45 in; 8 × 10) tarpaulin fabric have already been covered in Part 2 of the standard [IS : 7406 (Part 2)-1980*].

0.6 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes constructional details and other requirements of the laminated jute bags manufactured from basic fabric conforming to IS : 7407 (Part 2)-1980‡.

2. REQUIREMENTS

2.1 Bonding

2.1.1 The bitumen application shall be done on the fabric leaving a margin of 15 to 60 mm from the open end of the bag and preferably 10 mm from the cloth selvedge at the other end.

2.1.2 Bitumen should be applied in spot (off set) or completely spread over as specified in the contract. The bitumen content shall be ± 15 g/m² in case of off set and 110 ± 20 g/m² in case of complete application (see IS : 8477-1977§).

2.1.3 The bitumen shall conform to the requirements given in Table 1 corresponding to the grade 90/15 of IS : 702-1961||.

NOTE — The bitumen should be applied at a suitable temperature on the fabric with the help of a mechanism set for reasonably uniform distribution.

2.2 Liner — Low density virgin polyethylene film of such thickness that corresponds to its mass of 23 g/m² \pm 10 percent (100 gauge) or high molecular high density polyethylene (HM — HDPE) film of such thickness that corresponds to its mass of 12.5 g/m² \pm 10 percent (50 gauge) (see B-1, and IS : 8477-1977§). Heavier liners may be used at the option of the buyer.

NOTE — The polyethylene film to be used in the fabrication of the bags should have smooth surface and should be free from pin holes, air bubbles, fish eyes, and creases, and wrinkles.

*Specification for jute bags for packing fertilizers : Part 2 Laminated bags manufactured from 380 g/m²; 68 × 39 tarpaulin fabric.

†Rules for rounding off numerical values (revised).

‡Specification for jute tarpaulin fabric : Part 2 407 g/m²; 85 × 39 (first revision).

§Method for determination of bitumen content in laminated jute bags.

||Specification for industrial bitumen (revised).

AMENDMENT NO. 1 NOVEMBER 1986

TO

IS:7406 (Part 1)-1984 SPECIFICATION FOR JUTE
BAGS FOR PACKING FERTILIZERS

PART 1 LAMINATED BAGS MANUFACTURED FROM 407 g/m²;
85x39 TARPAULIN FABRIC

(First Revision)

(Page 4, clause 2.1.1, line 2) - Substitute
'25 to 60 mm' for '15 to 60 mm'.

(Page 4, clause 2.1.2, last line) - Substitute
the following for the existing matter:

'application when tested in accordance with
IS:8477-1977⁵.'

(Page 4, clause 2.2) - Substitute the following
for the existing clause:

"2.2 Liner - Low density virgin polyethylene film
(see IS:2508-1984 'Specification for low density
polyethylene films (second revision)') of such thick-
ness that corresponds to its mass of
23g/m² + 10 percent (25 microns or 100 gauge) or
High Molecular High Density Polyethylene Film,
HM-HDPE film (see IS:10889-1984 'Specification for
high density polyethylene films') of such thickness
that corresponds to its mass of 12.5 g/m² + 10 per-
cent (12.5 microns or 50 gauge) (see B-1 and
IS:8477-1977⁵). Heavier liners may be used at the
option of the buyer."

(*Page 5, clause 2.2.2*) - Add the following at the end:

'The liner should extend beyond the bitumenized area and there should not be any uncovered bitumenized portion.'

(*Page 5, clause 2.4*) - Add the following at the end:

'There should not be any delamination of the liner.'

[*Page 7, clause 5.1(b)*] - Add the following at the end:

'However, not more than 10 percent of the bags shall have a liner thickness lower than 25 percent of the specified thickness.'

(TDC 3)

2.2.1 The liner should be lightly smeared after lamination with French chalk or its equivalent for easy opening of the bag.

2.2.2 The liner should cover the entire area leaving a margin of about 25 mm at the open end of the bag.

2.3 Type of Stitches — Two rows of lock stitch or chain stitch separated from each other by about 5 mm with the outer row of stitching approximately 10 mm from the edge of the bag.

2.3.1 The selvedge shall form the mouth of the bag.

2.3.2 Stitching should be done with fold over seam (to a depth of about 25 mm) so that stitches go through 4 layers of laminated fabric.

2.3.3 The number of stitches per decimetre should be 9 to 12.

2.3.4 The thread/cord used for the stitching shall be specified in the contract depending upon whether the material to be packed is neutral or acidic.

2.4 The polyethylene lined bitumen bonded bag shall generally be free from bitumen oozing out in the outward side.

2.5 The bag shall conform to the requirements given in Table 1 for the dimensions and breaking strength.

3. PACKING AND MARKING

3.1 Packing — The bags shall be delivered in the trusses.

3.1.1 The number of bags per truss shall be as specified in the contract.

3.2 Marking — Unless otherwise specified, the following information shall be marked on the trusses:

- a) Name of the manufacturer,
- b) Description of goods,
- c) Number of bags per truss,
- d) Lot number of the truss, and
- e) Any other particulars required by the buyer or by the law or regulation in force.

**TABLE 1 REQUIREMENTS OF LAMINATED JUTE BAGS FOR
PACKING FERTILIZERS**

(Clause 2.5)

Sl. No.	CHARACTERISTIC	REQUIREMENT	METHOD OF TEST
(1)	(2)	(3)	(4)
i)	For packing lower bulk density fertilizers:		
	a) Outside length	99 $\begin{smallmatrix} + 3 \\ - 0 \end{smallmatrix}$ cm	B-2
	b) Outside width	61 $\begin{smallmatrix} + 3 \\ - 0 \end{smallmatrix}$ cm	
ii)	For packing higher bulk density fertilizer:		
	a) Outside length	91 $\begin{smallmatrix} + 3 \\ - 0 \end{smallmatrix}$ cm	B-2
	b) Outside width	56 $\begin{smallmatrix} + 3 \\ - 0 \end{smallmatrix}$ cm	
iii)	Breaking load of laminated fabric (strip method: 10 × 20 cm), N (kgf)*, Min	N kgf	
	Warpway	1 960 (200)	IS : 1969-1968†
	Weftway	1 080 (110)	
iv)	Breaking load of seam (see Note) (strip method: 5 × 20 cm) N (kgf)*, Min		
	Side seam	540 (55)	IS : 9030-1979‡
	Bottom seam	315 (32)	

NOTE — Other sizes may also be used at the option of the buyer subject to the same tolerance of $\begin{smallmatrix} + 3 \\ - 0 \end{smallmatrix}$ cm for length and width. It is, however, advisable to keep adequate free space as stated in 0.2.

*1 kgf = 9.8 N approx.

†Method for determination of breaking load and elongation at break of woven textile fabrics (first revision).

‡Method for determination of seam strength of jute fabrics including their laminates.

3.2.1 Each truss may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors may be obtained from the Indian Standards Institution.

4. SAMPLING AND INSPECTION

4.1 Unless otherwise specified, the procedure for sampling shall be as given in Appendix A and the procedure of testing/inspection as given in Table 1.

5. CRITERIA FOR CONFORMITY

5.1 The lot shall be considered as conforming to the requirements of this standard if the following conditions are satisfied:

- a) The average number of bags tested for bitumen bonding satisfy the corresponding requirements specified in 2.1.
- b) The average number of bags tested for liner mass satisfy the requirements specified in 2.2.
- c) The dimension of at least 90 percent of the bags under test are in accordance with the requirements specified in Table 1. In the remaining bags, no bag shall have dimensions less than 1.5 cm below the specified values.
- d) The average breaking load for the laminated fabric and seam conform to the requirements specified in Table 1.

A P P E N D I X A

(Clause 4.1)

SAMPLING

A-1. SAMPLING PROCEDURE

A-1.1 A minimum number of trusses shall be taken at random from the lot and subjected to the corresponding tests.

NOTE — All the trusses containing one definite number of bags of same dimensions and quality, delivered to one buyer against one despatch note, shall constitute a lot.

A-1.2 The number of trusses to be sampled from each lot separately for testing various characteristics shall be as follows:

<i>Lot Size</i>		<i>Sample Size for Inspection</i>
Up	to 10	1
11	„ 20	2
21	„ 50	3
51	„ 100	4
101	„ 150	5
151	„ 200	6
201	„ 250	7
251	„ 300	8
301	„ 350	9
351	„ 400	10
401	and above	10 + 1 for every 100 trusses or part thereof above 401 trusses

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A-1.3 From each of the trusses selected according to **A-1.2** the test samples shall be drawn as follows:

<i>Test</i>		<i>Sample Size</i>
Length and width, ends, picks and sewing		10 percent of the selected bags
Bitumen bonding	}	2 bags
Liner		
Breaking load:	}	2 bags from each truss subject to a minimum of 5 bags in a lot
Fabric		
Seam		

A P P E N D I X B
(*Clause 2.2 and Table 1*)
TESTING AND INSPECTION

B-0. ATMOSPHERIC CONDITIONS FOR TESTING

B-0.1 Tests may be carried out in the prevailing atmospheric conditions with relative humidity between 40 and 90 percent.

B-1. LINER

B-1.1 Take the combined mass of the liner pieces as obtained in IS : 8477-1977* and calculate its mass in grams per square metre (g/m²).

B-2. LENGTH AND WIDTH

B-2.1 Lay each bag flat free from creases and wrinkles on a table and measure the outside length and width about the centre to the nearest 0.5 cm of all the bags under test.

*Method for determination of bitumen content to laminated jute bags.

AMENDMENT NO. 2 OCTOBER 2005
TO
IS 7406 (PART 1) : 1984 SPECIFICATION FOR JUTE
BAGS FOR PACKING FERTILIZERS
PART 1 LAMINATED BAGS MANUFACTURED FROM 407 g/m²;
85 × 39 TARPAULIN FABRIC

(First Revision)

(Page 8, Appendix B, clause B-0.1) --- Substitute the following for the existing:

'Test shall be carried out in the standard atmospheric condition with temperature at $27 \pm 2^{\circ}\text{C}$ and relative humidity 65 ± 2 percent.'

(TX 03)

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